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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,210	06/13/2001	Michael A. Kouritzin	EA-00095	4093

7590 04/14/2003

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EXAMINER

WEST, JEFFREY R

ART UNIT PAPER NUMBER

2857

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/879,210

Applicant(s)

KOURITZIN ET AL.

Examiner

Jeffrey R. West

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because its length exceeds the 150 word limit. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities:

On page 7, lines 19-20, the description, "with more difficult types of noise that most reduce the information contained in an observation" is unclear.

Appropriate correction is required.

Claim Objections

3. Claims 1 and 5-8 objected to because of the following informalities:

In claim 1, "data associated with then state of said signal process at sampled" should be --- data associated with the state of said signal process at a sampled ---.

Claims 5-8 are objected to because of incorrect dependency. It appears that claims 5, 6, 7, and 8 have been renumbered as claims 4, 5, 6, and 7. A corresponding change in the dependency of these claims, however, has not been made. Therefore, it is suggested that newly numbered claim 5 depend from claim 4, newly numbered claim 6 depend from claim 5, and newly numbered claim 7 depend from claim 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 recites, "dividing the collection of said particle state data by the number of particles to provide the estimate of a conditionally probability distribution of said signal process at the time of the most recent measurement preceding a request for said distribution and probability." The specification, however, fails to disclose a sufficient description to allow one having ordinary skill in the art to use the invention. There is no mention in the specification of a request for a distribution and probability. Further, there is no description of dividing the collection of particle state data by the number of particles. The equation on page 6, line 34, presents division by a density function of a random noise variable, the equation on page 7, line 11, presents division by a variance Gaussian noise, and the equation on page 3, line 30 of the background of the invention, presents division by a summation of a plurality of scalar weight values. Because a corresponding description for these limitations is not present, it is unclear to one having ordinary skill in the art how to use the invention as claimed.

Claims 2-7 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate, and fail to correct, the lack of clarity present in claim 1.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites, "and by employing sampled data obtained up to the current time to estimate probabilistically said particle paths, by assigning the weight of one divided by the current number of paths to each of said paths." In this recitation, it is unclear to which processes the steps are referring. For example, it is unclear whether "by assigning . . . " is further limiting the step for "estimating the joint conditional probability" or the method for "employing sampled data".

Claims 3-7 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the faulty language present in parent claim 2.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,933,352 to Salut in view of Ballantyne et al., "Novel Branching Particle Method for Tracking."

Salut discloses a method and a system for non-linear optimal estimation of dynamic processes in real time comprising providing measurement sensing of sampled data associated with the state of a signal process at a sampled instant of time under consideration, creating state data for particles that probabilistically resemble the state of said signal process, and repeatedly computing estimates of a conditional probability distribution based upon the arrival of new sampled data at subsequent sampled instants of time (column 5, lines 13-26 and 60-65). Salut also discloses calculating scalar magnitude weights, based upon weight values at a preceding (i.e. ancestral) instant, representing the probability that the components are those of the current state of the dynamic process to be estimated, all of which taking into account (i.e. scaling for) the probability of noise disturbing the measurements (column 5, lines 29-39 and 46-52).

As noted above, the invention of Salut teaches all of the features of the claimed invention except for calculating branching values for each particle in order to determine necessary branching in performing the conditional probability estimation.

Ballantyne teaches a novel branching particle method for tracking a maneuvering signal given only a corrupted sequence of observations and estimating a conditional distribution based on the observations (abstract and 2.3) by calculating branching values for each new particle obtained and selectively duplicating or removing the

particles based upon their agreement with each branching value (3.2.3). Ballantyne also teaches dividing the collection of particle data by the number of particles at the most recent time (Equation 20 and 3.3)

It would have been obvious to one having ordinary skill in the art to modify the invention of Salut to include calculating branching values for each particle in order to determine necessary branching in performing the conditional probability estimation, as taught by Ballantyne, because, as suggested by Ballantyne, the combination would have provided a method for improved speed and more cautious particle adjustment to avoid erroneous adjustment that hamper long-term adaptation (5).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,466,888 to McCool et al. teaches a neural network system for estimation of non-linear aircraft flight data.

U.S. Patent No. 6,484,132 to Hively et al. teaches a condition assessment of nonlinear processes.

U.S. Patent No. 6,466,894 to Takeuchi et al. teaches a device, method, and medium for predicting a probability of an occurrence of a data.

U.S. Patent No. 4,841,444 to Chittineni teaches a method for continuous estimation by non-linear signal matching of seismic traces.

Art Unit: 2857

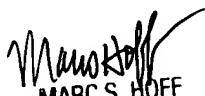
Kouritzin, "On the Convergence of Linear Stochastic Approximation Procedures", teaches stochastic approximation procedures.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
April 3, 2003


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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